FIG.1

CONTOUR INFORMATION

A

3

32

32D CONNECTION CREATOR

32C INTERNODE DISTANCE CALCULATOR

32B CONTOUR DEFORMATION UNIT

32A NODE LOCATOR

31

TARGET DISTANCE DETECTOR 31A

TARGET DISTANCE

TARGET REGION DETERMINATION SECTION 31B

TARGET REGION

2

DISTANCE INFORMATION

21 DISTANCE INFORMATION GENERATOR

MOTION INFORMATION

22 MOTION INFORMATION GENERATOR

EDGE INFORMATION

23 EDGE INFORMATION GENERATOR

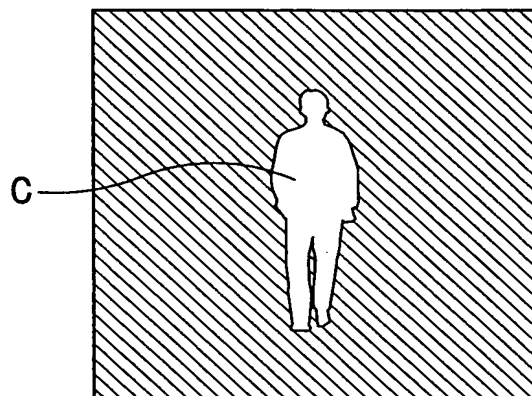CAMERA PARAMETER

1b

1a

1

B

FIG.2A

DISTANCE IMAGE P1

C

FIG.2B

DIFFERENCE IMAGE P2
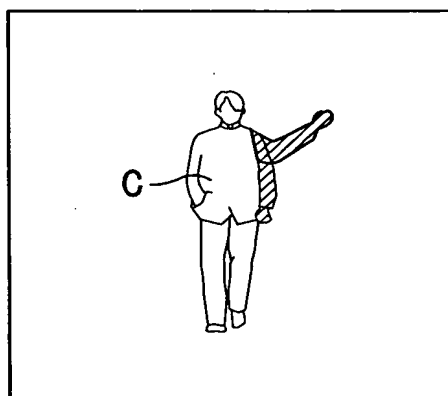

C

FIG.2C
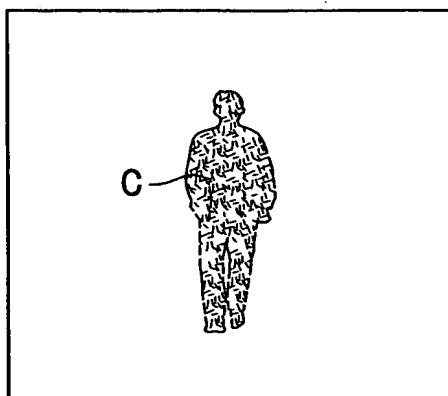
EDGE IMAGE P3

C

FIG.3A

DETERMINATION OF TARGET DISTANCE D1
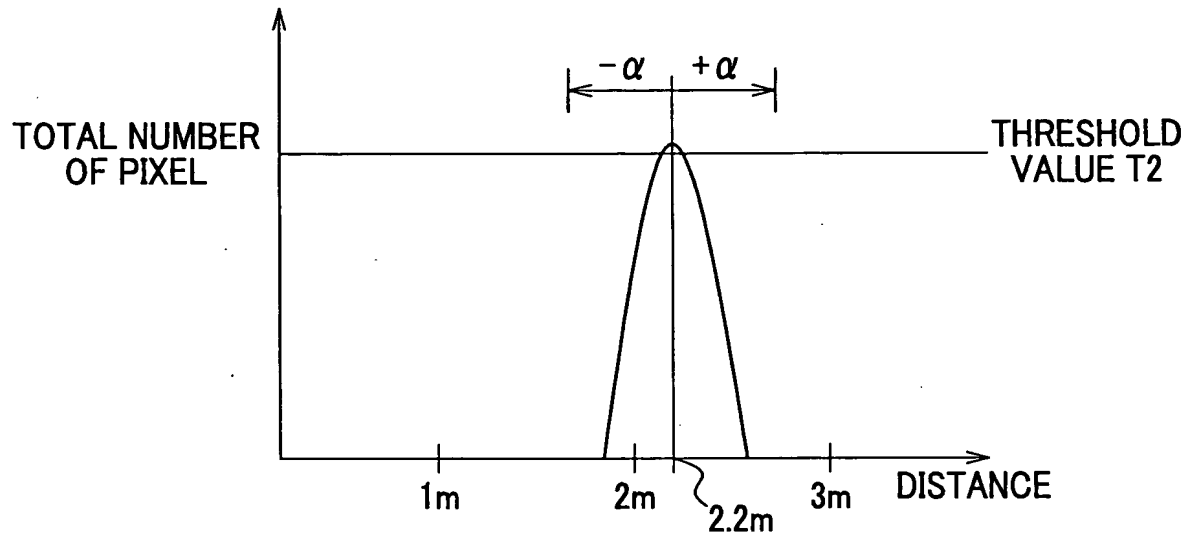
FIG.3B

GENERATION OF TARGET DISTANCE IMAGE P4

FIG.4A

DETERMINATION OF TARGET REGION A(1)

IMAGE OF TARGET DISTANCE P4

C

CENTERLINE
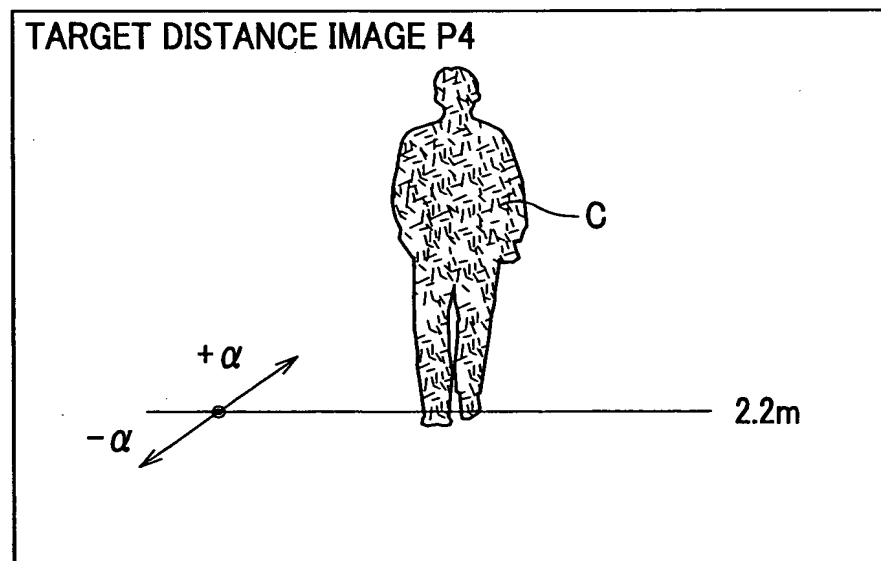
HISTOGRAM H1
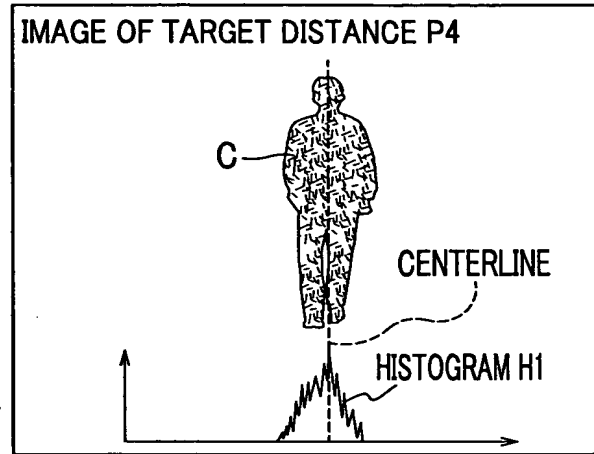
FIG.4B

DETERMINATION OF TARGET REGION A(2)

IMAGE OF TARGET DISTANCE P4

0.5m | 0.5m

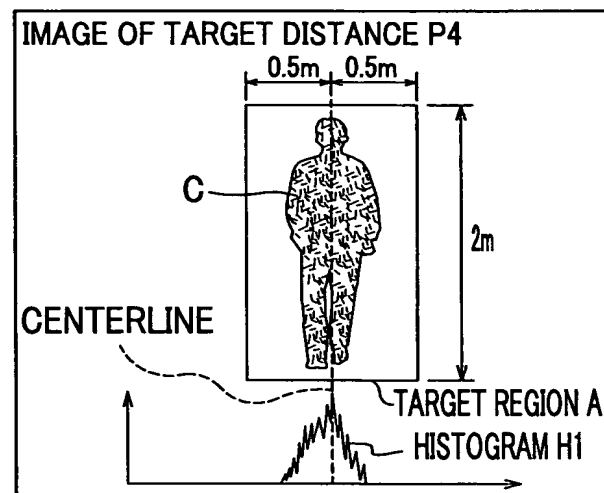2m

C

CENTERLINE

TARGET REGION A

HISTOGRAM H1
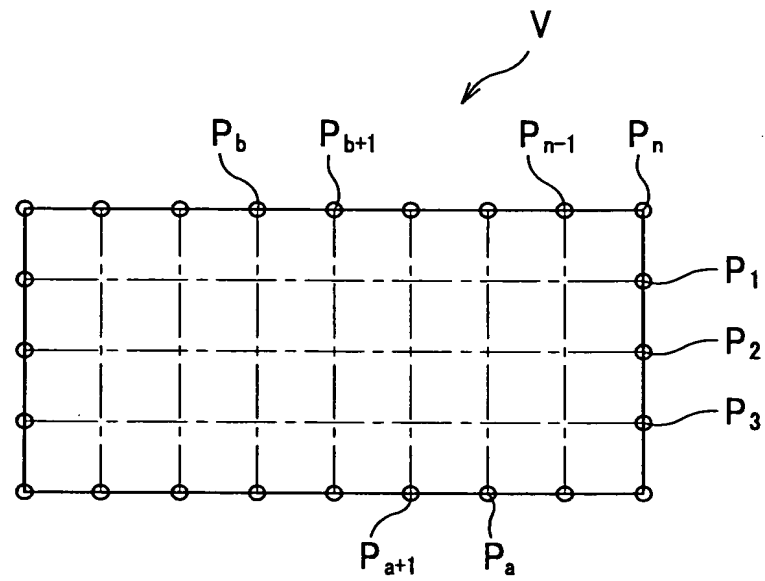
FIG.5A

ARRANGING NODES Pi (i=1,2,···,n)

FIG.5B

DEFORMING CONTOUR V
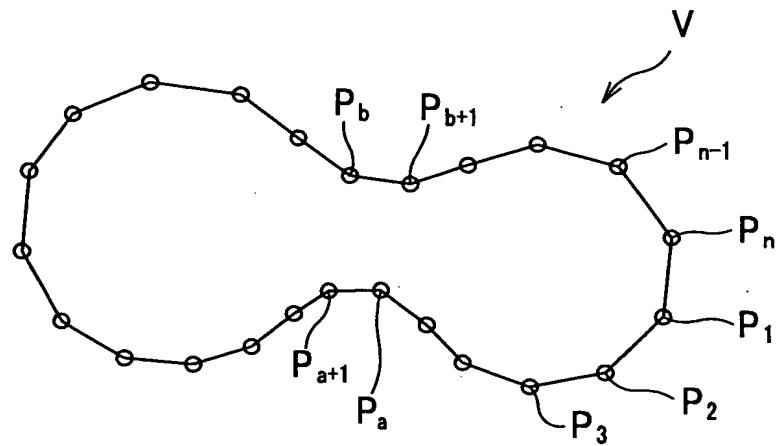
FIG.6A

MEASURING INTERNODE DISTANCE D2

MEASURING INTERNODE DISTANCE D2
FROM NODE P_1 TO P_3, P_4, ···,P_{n-1}, RESPECTIVELY.

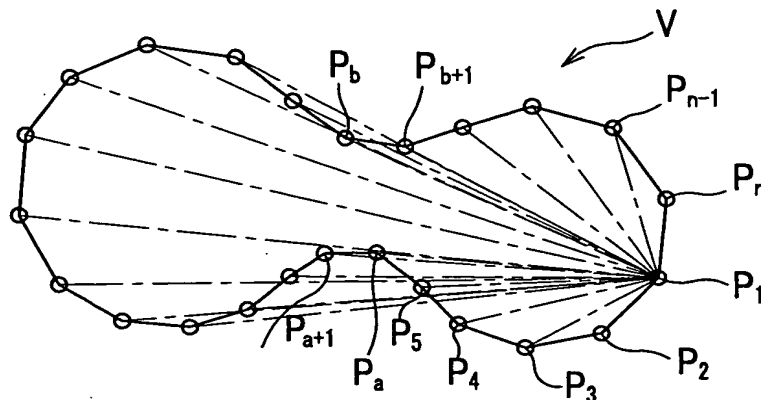# FIG.6B

MEASURING INTERNODE DISTANCE D2
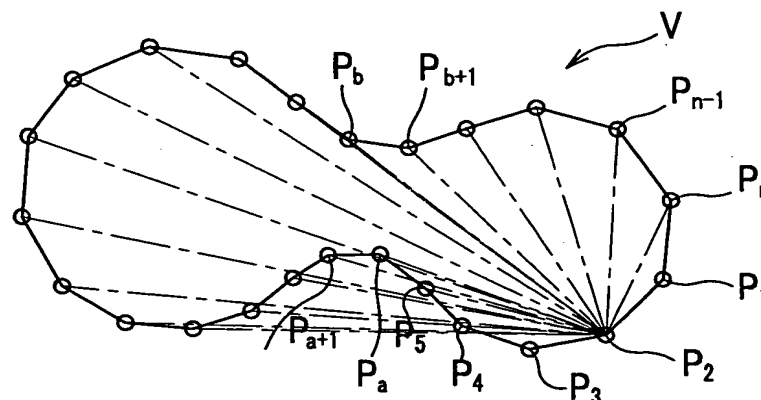FROM NODE P_2 TO P_4, P_5, ···,P_n, RESPECTIVELY.

FIG.6C

MEASURING INTERNODE DISTANCE D2
FROM NODE P_{n-2} TO P_n
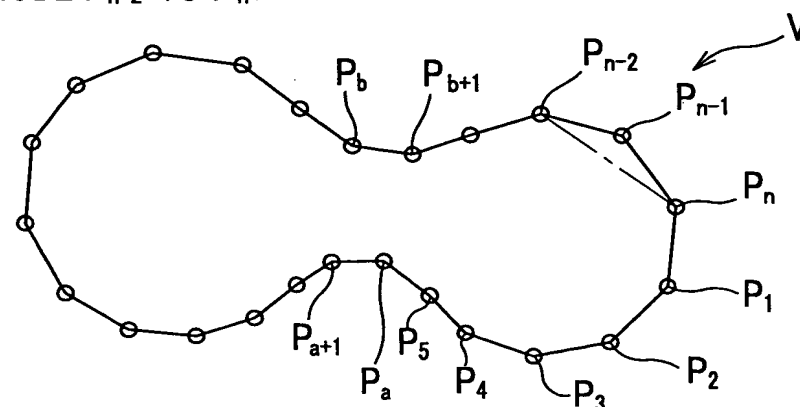
FIG.7A

SEARCHING COMBINATION (P_a, P_b) OF NODES P_i THAT SATISFIES D2 $\leqq$ D3.
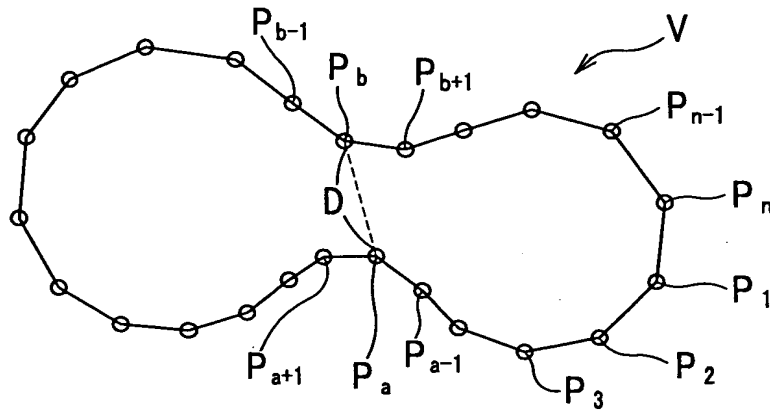
FIG.7B

CREATING CONNECTION LINES L1 AND L2.
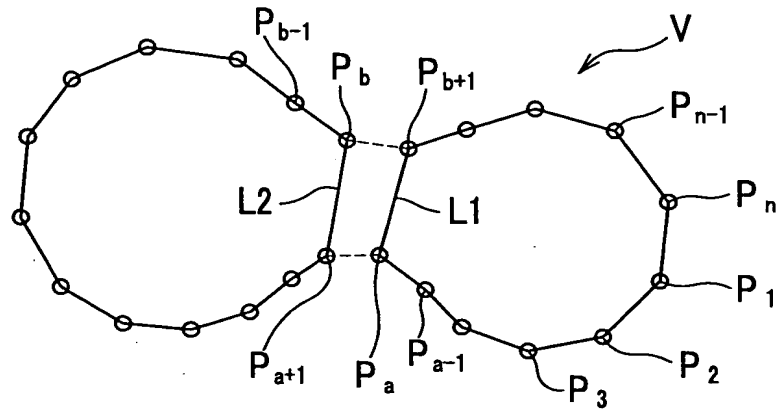
FIG.7C

DIVIDING CONTOUR V INTO CONTOURS V1 AND V2.

FIG.8

PROCESSING IN CONTOUR EXTRACTION SYSTEM A

(START)

INPUT OF IMAGE	S1

GENERATING DISTANCE INFORMATION (DISTANCE INFORMATION GENERATOR 21)	S2

STEP OF ANALYZING IMAGE

GENERATING MOTION INFORMATION (MOTION INFORMATION GENERATOR 22)	S3

GENERATION EDGE INFORMATION (EDGE INFORMATION GENERATOR 23)	S4

MEASURING TARGET DISTANCE (TARGET DISTANCE DETECTOR 31A)	S5

STEP OF ESTABLISHING TARGET REGION

ESTABLISHING TARGET REGION (TARGET REGION DETERMINATION SECTION 31B)	S6

(a)

FIG.9

PROCESSING IN CONTOUR EXTRACTION SYSTEM A

```
                              ( a )
                                │
                                ▼
STEP OF          ┌──────────────────────────────┐
DISPOSING NODES  │      DISPOSING NODES          │── S7
                 │     (NODE LOCATOR 32A)        │
                 └──────────────────────────────┘
                                │
                                ▼
STEP OF          ┌──────────────────────────────┐
DEFORMING        │      DEFORMING CONTOUR        │── S8
CONTOUR          │ (CONTOUR DEFORMATION UNIT 32B)│
                 └──────────────────────────────┘
                                │
                                ▼
STEP OF MEASURING ┌──────────────────────────────┐
INTERNODE DISTANCE│ MEASURING INTERNODE DISTANCE  │── S9
                  │    (INTERNODE DISTANCE        │
                  │     CALCULATOR 32C)           │
                  └──────────────────────────────┘
                                │
                                ▼
                         ╱──────────────╲          No
STEP OF CREATING      ╱  D2 ≦ D3 EXIST?  ╲──────────
CONNECTION LINE       ╲                  ╱   S10
                         ╲──────────────╱
                                │ Yes
                                ▼
                 ┌──────────────────────────────┐
                 │    CREATING CONNECTION LINE   │── S11
                 │   (CONNECTION CREATOR 32D)    │
                 └──────────────────────────────┘
                                │
                                ▼
                         ╱──────────────╲          No.
                      ╱ REPEAT COUNT >    ╲──────────
                      ╲ THRESHOLD Th1?    ╱
                         ╲──────────────╱   S12
                                │ Yes
                                ▼
                              ( b )
```

STEP OF MEASURING INTERNODE DISTANCE

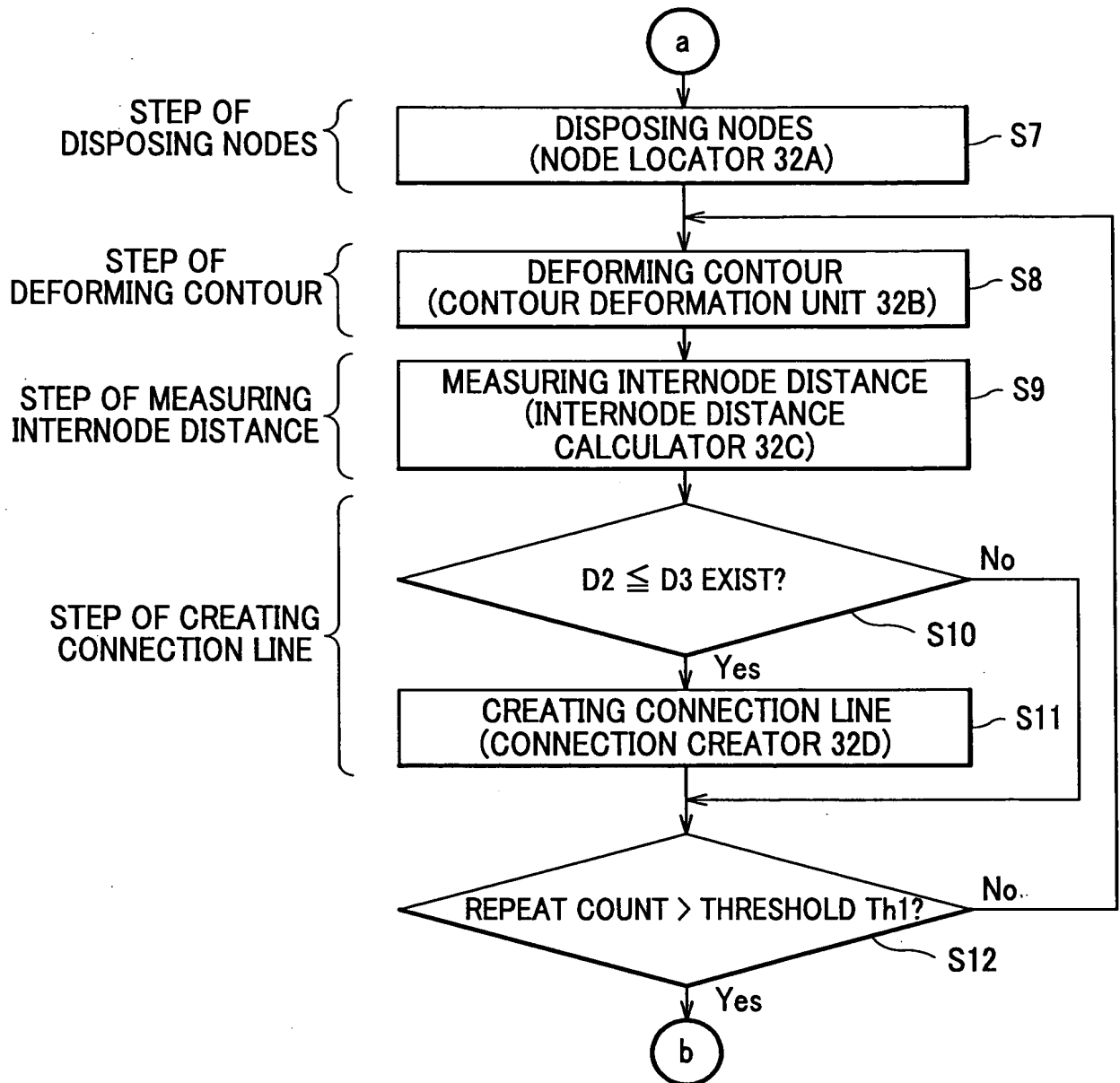$D2 \leqq D3$ EXIST?

REPEAT COUNT > THRESHOLD Th1?

FIG.10

PROCESSING IN CONTOUR EXTRACTION SYSTEM A
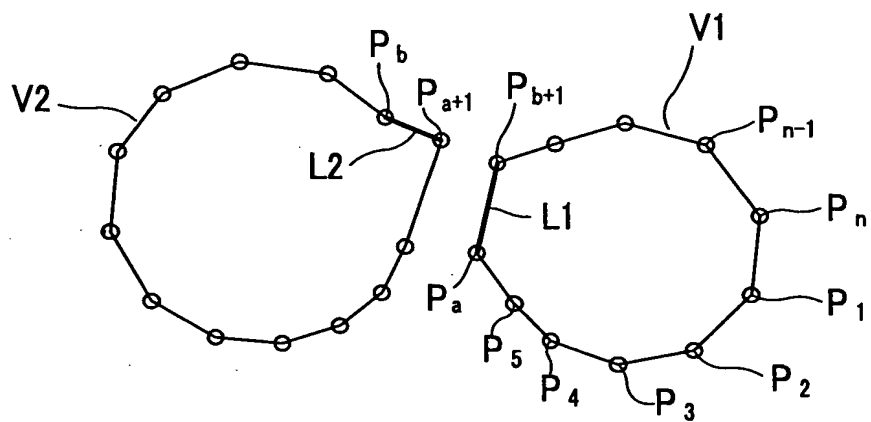
FIG.11A
RELEVANT ART
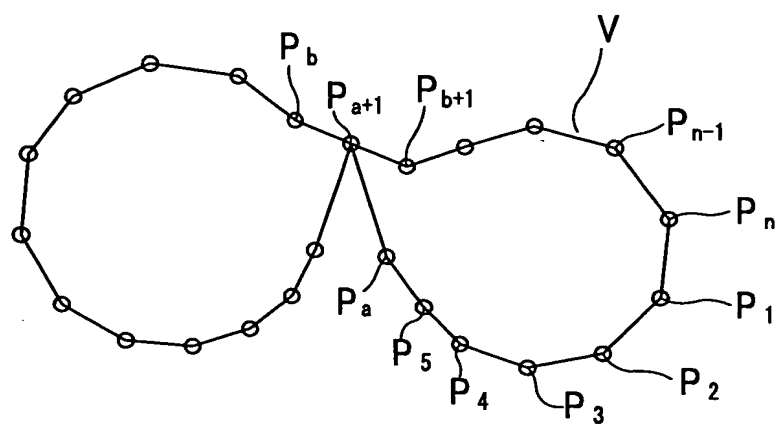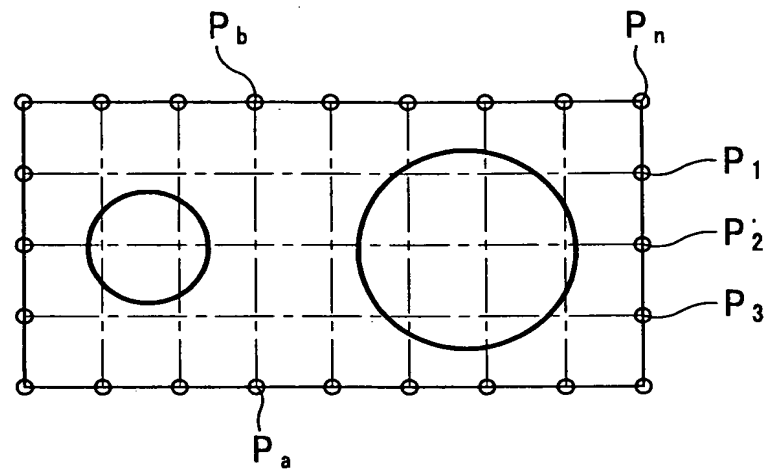

FIG.11B
RELEVANT ART

FIG.12A
RELEVANT ART

FIG.12B
RELEVANT ART

FIG.12C
RELEVANT ART